

CLAIMS

What is claimed is:

1. A method for automatically finding out the position of a document placed on a scanner from a pre-scanned image taken from the scanner window including portions of a background color, an illuminator and the document, comprising steps of:
 - 5 a) determining a preliminary range having a minimum rectangular area covering said illuminator and said document by searching from the rim toward the center of said pre-scanned image based on distinguishing from said background color;
 - b) encoding the relationship between said document and said background color into an identification code by registering the colors of four corner points of said preliminary range that indicates whether said corners have the same color with said background color;
 - 10 c) finding out the positional relationship between a center point of said illuminator and a center point of said preliminary range;
 - d) determining the direction of said document in said preliminary range; and
 - 15 e) finding out the detailed position of said document by searching the boundary of said document from the rim of said preliminary range in said direction toward said document.
2. A method for automatically finding out the position of a document placed on a scanner according to claim 1 wherein said step of determining a preliminary range starts from one side of said pre-scanned image, searches along one axis of coordinates to verify the change of color of pixels on each line; then the same process on another axis of coordinates so as to get coordinates of four corners P1(X1,Y2), P2(X2,Y2), P3(X2,Y1) and P4(X1,Y1).
- 20 3. A method for automatically finding out the position of a document placed on a scanner according to claim 2 wherein said process of searching along one axis of coordinates includes verifying along X-axis the change of color of pixels on each column till a column

X1 of pixels that includes a different color; further searches till a column Xe of pixels that revert the same color, then the coordinate X2 equals to Xe-1.

4. A method for automatically finding out the position of a document placed on a scanner according to claim 2 wherein said process of searching along one axis of coordinates

5 includes verifying along Y-axis the change of color of pixels on each column till a row Y1 of pixels that includes a different color; further searches till a row Ye of pixels that revert the same color, then the coordinate Y2 equals to Ye-1.

10 5. A method for automatically finding out the position of a document placed on a scanner according to claim 1 wherein said identification code for corner points of said preliminary range is encoded with “1” for the same color with said background color, and “0” for other colors different from said background color.

15 6. A method for automatically finding out the position of a document placed on a scanner according to claim 1 wherein said positional relationship between a center point of said illuminator and a center point of said preliminary range is based on a same origin point of coordinates.